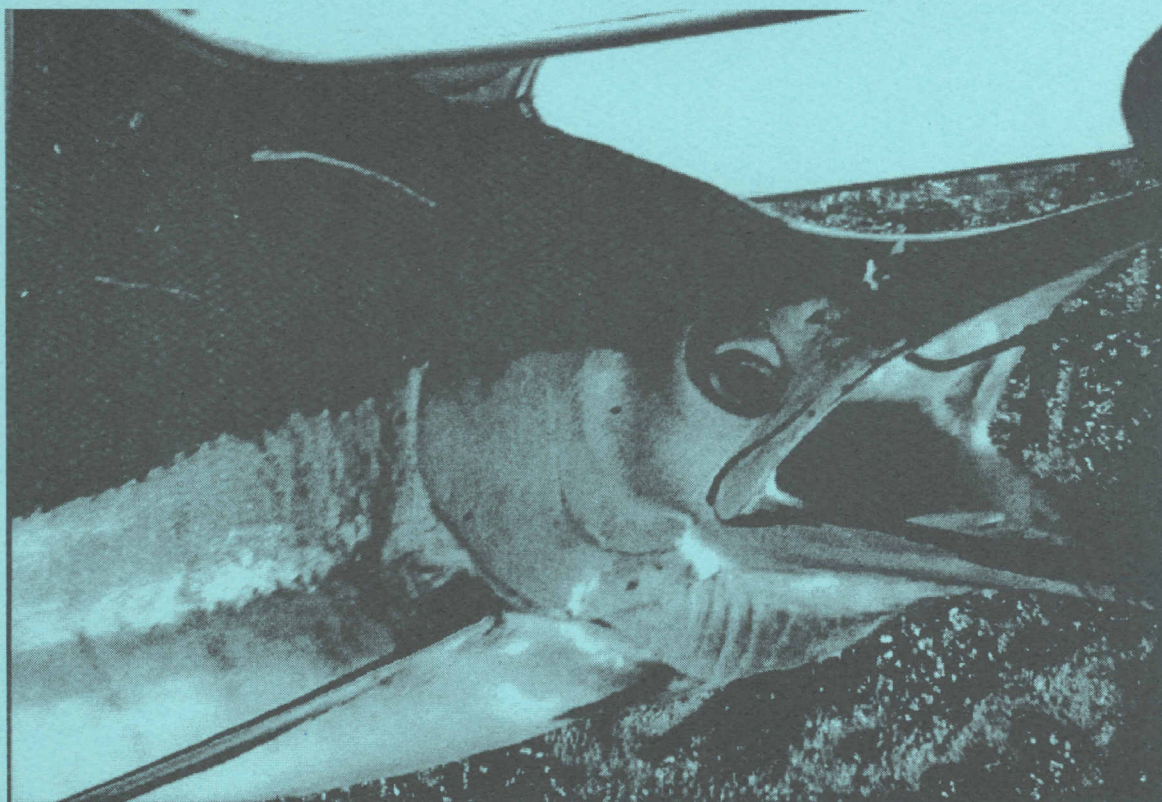


NOAA Technical Memorandum NMFS-SEFSC-346



**COOPERATIVE GAME FISH
TAGGING PROGRAM ANNUAL
NEWSLETTER: 1992**



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April 1994

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
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COOPERATIVE GAME FISH TAGGING PROGRAM ANNUAL NEWSLETTER: 1992¹



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NATIONAL MARINE FISHERIES SERVICE
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April 1994

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Cooperative Tagging Center

In response to the recent expansion of tag release and recapture activities, data requests from other tagging agencies, and domestic and international tagging research needs, the National Marine Fisheries Service's (NMFS) Southeast Fisheries Science Center formed the Cooperative Tagging Center (CTC) in 1992. The CTC encompasses a variety of functions and responsibilities. For example, in addition to such traditional programs as the Cooperative Game Fish Tagging Program (CGFTP), the CTC also includes the Cooperative Tagging System (CTS), as well as other research projects such as tag development and tag performance research. While the CGFTP is the main subject of this newsletter, other tagging activities within or related to the CTC are also presented in this report.

Cooperative Game Fish Tagging Program - 1992 Activities

The Cooperative Game Fish Tagging Program (CGFTP) is a joint research effort by scientists and recreational and commercial fishermen. It is designed to provide information on the movements and biology of marine fish species in the Atlantic Ocean, Gulf of Mexico, and the Caribbean Sea through the direct participation of the public in scientific research.

The CGFTP began in 1954, with its focus on the tagging of bluefin tuna. Almost immediately, in response to growing concerns about other highly migratory species, the program expanded to encompass billfishes (marlins, sailfish, and spearfish). As time went by, and exploitation affected a larger number of fisheries, other species of fish were added to the program. At the same time, the involvement of the public in tagging activities increased, and the tag-and-release attitude began to gain popularity. Today, from 10,000-20,000 participants contribute to

the program, from virtually every segment of the recreational and commercial fishing communities.

Growth of the tagging program in terms of total numbers of fish released and species tagged, has been exceptional in the last few years (Figure 1). For example, about 11,000 fish of 47 species were tagged and released in 1990, 16,000 fish of 61 species were tagged in 1991, and by 1992, almost 20,000 fish of 76 species were tagged by Program participants.

Sailfish

A total of 3,772 sailfish were tagged and released in 1992, 3,687 by recreational fishermen, 75 by commercial fishermen, and 10 by scientific staff. As in previous years, a majority of sailfish taggings (1,842) took place off the southeast coast of Florida. Other areas where large numbers of sailfish were tagged include: Cancun/Cozumel, Mexico (1,171), the coast of north Florida and the Carolinas (274), and the mid-U.S. east coast-Cape Hatteras, NC, to Long Island, NY (99). Program cooperators also tagged sailfish in La Guaira, Venezuela, the northern Bahamas, off southern Texas, and the U.S. Virgin Islands.

There were 73 tagged sailfish recaptured in 1992, 63 by recreational fishermen, 7 by commercial fishermen, and in 3 cases the type of fisherman was not reported. The locations of 1992 sailfish recaptures are given in Table 1, and a graph showing the years at-large is presented in Figure 2.

The longest straight-line distance traveled (a minimum estimate of movement which provides no insight into route taken) by a sailfish recaptured in 1992 was about 1,400 nm. This fish was tagged by a U.S. recreational fisherman off of Isla Mujeres, Mexico in April, 1991, and recaptured by a Venezuelan longliner just north of LaGuaira, Venezuela in November, 1992. The longest time-at-large for a sailfish recaptured in 1992 was 1,672 days (4.6 yrs), for a fish released off Cancun in April, 1988, and recaptured by a Venezuelan longliner in November, 1992, north of Cumaná, Venezuela.

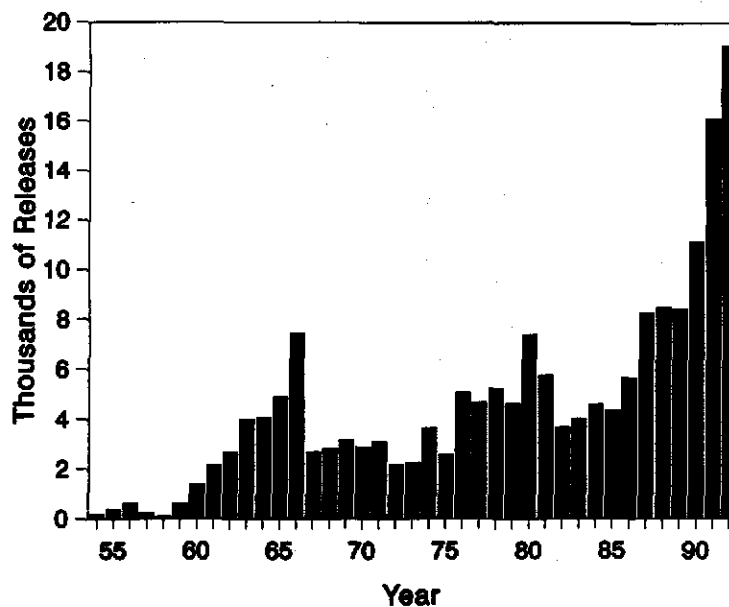


Figure 1. Number of fish tagged per year by scientists and cooperators of the Cooperative Game Fish Tagging Program, 1954 to 1992.

Table 1. Release and recapture areas for sailfish recaptured in 1992.

Release Area	Recapture Area	Total
S.E. Florida	S.E. Florida	19
	Florida Keys	10
	Cozumel	2
	Bahamas	1
Florida Keys	Florida Keys	15
	S.E. Florida	3
Cancun/Cozumel	Cuban Waters	4
	Cancun/Cozumel	3
	S.E. Florida	2
	Venezuela	1
	<other>	1
Other Atlantic	S.E. Florida	5
N. Florida & Carolinas	S.E. Florida	2
	Carolinas	1
	Mid-U.S.east coast	1
La Guaira	La Guaira	2
N. Bahamas	S.E. Florida	1
Total:		73

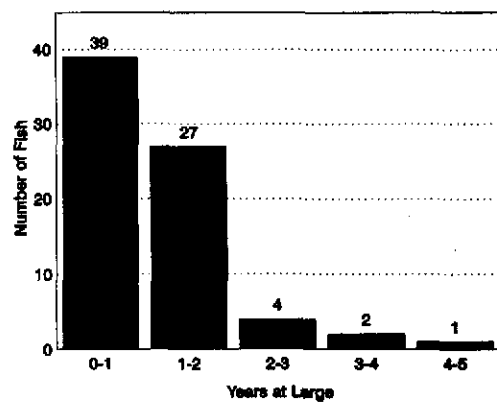


Figure 2. Years at-large for 1992 sailfish recaptures (N=73).

Blue Marlin

There were 1,671 tag-released blue marlin in 1992, 1,508 by recreational fishermen, 161 by commercial fishermen, and 2 by scientific staff. Most taggings took place off the U.S. Virgin Islands (where 342 blue marlin were tagged) and off Puerto Rico (248). Other blue marlin tagging locations include: the northern Bahamas (147), La Guaira (119), mid-U.S. east coast (109), and north Florida and the Carolinas (99). Blue marlin were also tagged and released in smaller numbers off the Louisiana coast, Florida panhandle, Bermuda, offshore U.S. east coast, the Texas coast, and southeast Florida.

Eighteen tagged blue marlin were recaptured in 1992, 9 by recreational fishermen, 8 by commercial fishermen, and 1 by an unknown source. The locations of the 1992 blue marlin recaptures are given in Table 2, and a graph showing the years at-large is presented in Figure 3.

Table 2. Release and recapture areas for blue marlin recaptured in 1992.

Release Area	Recapture Area	Total
Virgin Islands	Virgin Islands	1
	West Africa	1
	Venezuela	1
Puerto Rico	Puerto Rico	1
	Virgin Islands	1
Florida panhandle	American Gulf of Mexico	1
	Mexican Gulf of Mexico	1
La Guaira	La Guaira	2
Northern Bahamas	Cumaná	1
	Mid-U.S. east coast	1
Mid-U.S. east coast	Indian Ocean	1
Bermuda	Bermuda	1
S.E. Florida	Mid-U.S. east coast	1
Other Atlantic	Venezuela	1
<unknown>	<unknown>	3
Total:		18

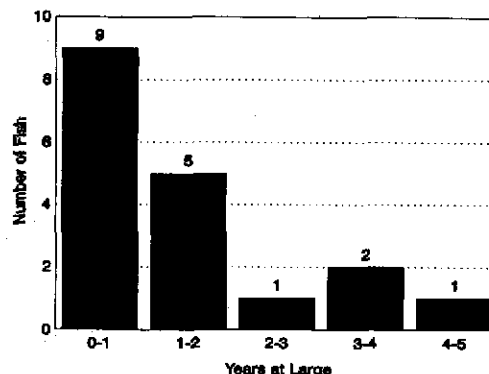


Figure 3. Years at-large for 1992 blue marlin recaptures (N=18).

In 1992, there were two particularly interesting recaptures. A blue marlin, tagged with a South Carolina tagging program² tag off Charleston in May, 1992, was recaptured about 500 miles east of Natal, Brazil, by a Japanese longliner in January, 1993. This was the first documented evidence of a blue marlin (or any billfish) making a transequatorial crossing (Figure 4a). Another blue marlin was recaptured in the Indian Ocean off of Mauritius (just east of Madagascar), by a local recreational fisherman in September, 1992, 1,108 days (3 yrs) after being tagged with a CGFTP tag by a recreational fisherman in Wilmington Canyon off the coast of Delaware in September, 1989 (Figure 4b). Points of release and recapture (Figure 4b) are indicative of the minimum distance traveled and do not provide insight into the route traveled. This is the first record of a tagged blue marlin to have crossed both the Atlantic Ocean and the equator, as well as the first example for any species of fish in the 40-yr. history of the tagging program to demonstrate movement outside the confines of the Atlantic Ocean and adjacent seas. The minimum distance traveled for this fish was about 9,100 nm. Further, this is the longest documented distance traveled by any fish in the CTC's history.

² Reported by Don Hammond, South Carolina Wildlife and Marine Resources Department Tagging Program.

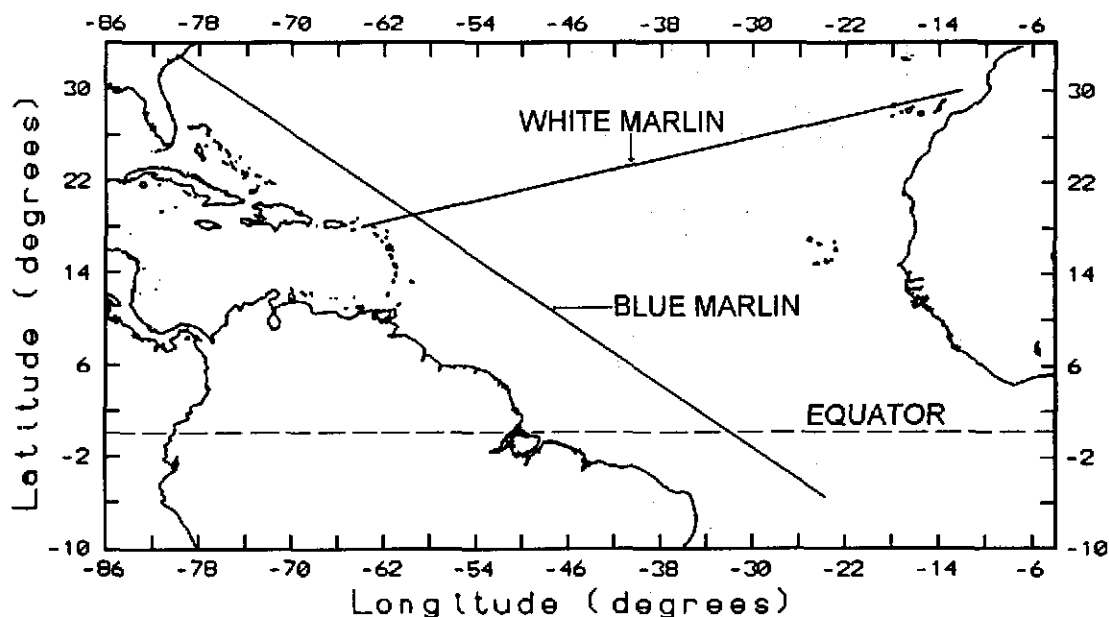


Figure 4a. First reported transequatorial tag return for an Atlantic billfish (blue marlin) and first trans-Atlantic movement for a white marlin.

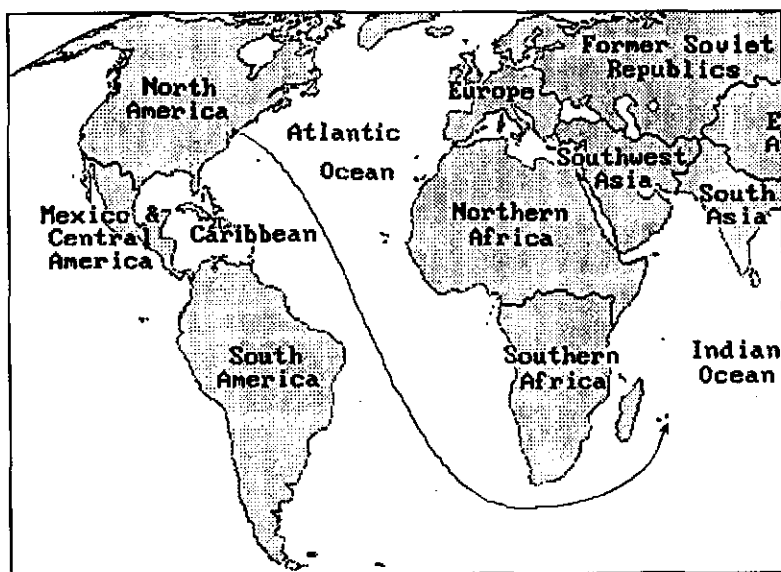


Figure 4b. First reported transoceanic tag return for an Atlantic billfish (blue marlin) — tagged off the coast of Delaware and recaptured 3 years later in the Indian Ocean off Mauritius.

The longest time at-large for a 1992 blue marlin recapture was 1,667 days (4.6 yrs.). This fish was released off St. Thomas, U.S.V.I. in October, 1987, and recaptured off La Guaira, Venezuela, in April, 1992.

White Marlin

In 1992, 1,171 white marlin were tagged and released; 912 by recreational fishermen, 255 by commercial fishermen, and 4 by scientific staff. As in previous years, most white marlin taggings were in two areas: off the mid-Atlantic states (Cape Hatteras, NC, to Cape Cod, MA), where 467 were tagged; and offshore U.S. east coast, where 109 were tagged. White marlin were also tagged and released off La Guaira, Cancun/Cozumel, Florida panhandle, north Florida and the Carolinas, and the coast of Louisiana.

Twenty-seven tagged white marlin were recaptured in 1992, 9 by recreational fishermen, 15 by commercial fishermen, 1 by scientific staff, and 2 by unknown sources. The locations of 1992 white marlin recaptures are given in Table 3, and a graph showing the years at-large is presented in Figure 5.

Table 3. Release and recapture areas for white marlin recaptured in 1992.

Release Area	Recapture Area	Total
Mid-U.S. east coast	Mid-U.S. east coast	8
	W. Atlantic	1
	<unknown>	1
	<other>	1
La Guaira	Cumaná	4
	Venezuela	2
	Mid-U.S. east coast	1
	<other>	2
Other Atlantic	Cumaná	3
Florida panhandle	N. Bahamas	1
Louisiana	Mid-U.S. east coast	1
Hispaniola	Cumaná	1
Virgin Islands	West Africa	1
Total:		27

The longest straight-line distance traveled by a white marlin recaptured in 1992 was a trans-Atlantic crossing which totalled about 3,150 nm (Figure 4a). This fish was tagged and released off St. Thomas, U.S.V.I. in January, 1991, by recreational fishermen, and recaptured in a drift net in August, 1992, by a local fisherman off Mohammedia, Morocco. This was the first documented crossing of the Atlantic by a white marlin.

The longest time at-large for a white marlin recaptured in 1992 was 3,367 days (9.2 yrs.), for a fish tagged 55 miles south of Grand Isle, LA, and recaptured off of Virginia Beach, VA. The release and recapture were both by recreational fishermen. The fish gained an estimated 15 lbs. while at liberty.

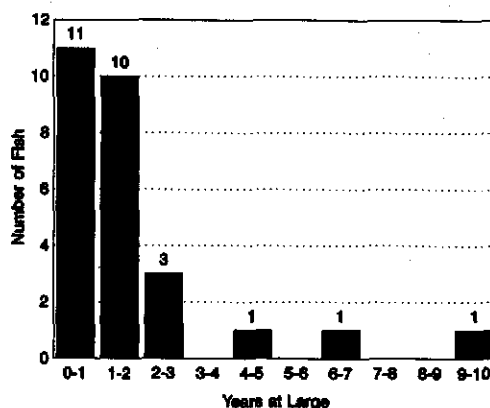


Figure 5. Years at-large for 1992 white marlin recaptures (N=27).

Swordfish

There were 1,401 swordfish tagged and released in 1992; most (1,290) were tagged by commercial fishermen, 60 by scientific staff, and 51 by recreational fishermen. Most of the swordfish tag-releases (886) were off the middle and northern U.S. east coast, 280 were in the central and northern Gulf of Mexico, and 168 were off the Florida east coast. A few swordfish were also tagged and released in the U.S. Virgin Islands, Trinidad and Tobago, and in the Bahamas.

Twelve tagged swordfish were recaptured in 1992, all 12 by commercial fishermen. The locations of 1992 swordfish recaptures are given in Table 4, and a graph showing the years at-large is presented in Figure 6.

The longest straight-line distance traveled by a 1992 tag-recaptured swordfish was 1,444 nm. This fish was released by a U.S. longliner just east of Hudson Canyon off of New Jersey in late July, 1991, and recaptured by a U.S. longliner only 197 days later about 70 miles southeast of St. Croix, U.S. Virgin Islands.

Table 4. Release and recapture areas for swordfish recaptured in 1992.

<u>Release Area</u>	<u>Recapture Area</u>	<u>Total</u>
Mid-U.S. east coast	Mid-U.S. east coast	2
	Virgin Islands	1
	W. Atlantic	1
	N. Bahamas	1
Gulf of Mexico	W. Atlantic	1
	S.E. Florida	1
W. Atlantic	W. Atlantic	1
	Other Atlantic	1
N. Florida & Carolinas	N. Florida & Carolinas	2
Florida Keys	N. Bahamas	1
Total:		12

The longest time at-large for a 1992 swordfish recapture was 1,783 days (4.9 yrs.) by a fish tagged by a Japanese tuna longliner over 500 miles off the New Jersey coast in February, 1988, and recaptured by a U.S. longliner about 180 miles north of Puerto Rico in December, 1992. This fish grew about 35 in. while at-large.

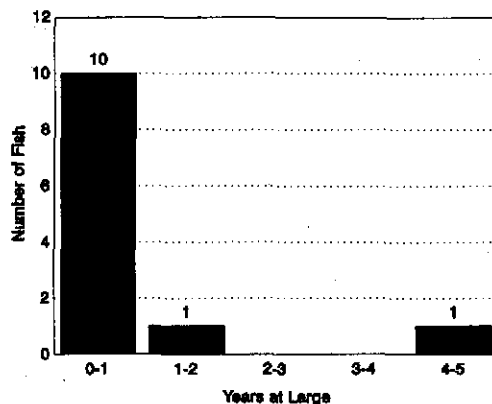


Figure 6. Years at-large for 1992 swordfish recaptures (N=12).

Bluefin Tuna

There were 998 bluefin tuna tagged and released in 1992, 842 by recreational fishermen, 155 by commercial fishermen, and 1 by scientific staff. Nearly all bluefin tagged (957) were released off the mid-U.S. east coast or off New England.

Nineteen tagged bluefin were recaptured in 1992, 14 by recreational fishermen, 4 by commercial fishermen, and 1 where the type of fisherman is unknown. Fifteen of the 19 recaptures were in waters off the mid-U.S. east coast, 2 were recaptured just north of Cape Cod, and 2 made trans-Atlantic crossings. The locations of 1992 bluefin recaptures are given in Table 5.

The longest straight-line distance traveled by a bluefin tuna recaptured in 1992 was a trans-Atlantic crossing of about 3,168 nm; it was tagged and released in August of 1986 by a U.S. recreational fisherman south of Montauk Point, NY. In June, 1992, it was recaptured by a purse seiner in the Mediterranean in the Ibiza Channel (25 miles east of the Spanish coast). This fish was at-large for 2,116 days (5.8 yrs.) and gained an estimated 363 lbs. during that time. Another bluefin tuna was recaptured in 1992 after having made a trans-Atlantic crossing. This fish was released in October of 1991 by a U.S. fisherman about 30 miles southeast of Montauk, NY. It was recaptured in August, 1992, in the Bay of Biscay, off the French coast, north of

Spain. This fish gained an estimated 24 lbs. and grew an estimated 5 in. – the recapturing gear is unknown.

The longest time at-large for bluefin tunas recaptured in 1992 was 5,529 days (15.1 yrs.). It was released in July, 1977, off of Virginia Beach, VA, and recaptured in August, 1992, off Portland, ME. Both the release and recapture were by U.S. purse seiners. This is the longest time at-large for any fish recaptured in 1992. Unfortunately, no hard parts were saved for analysis, so potentially important information was lost. Of the 1992 bluefin tuna recaptures, 12 were at-large less than one yr., 4 between 1 and 2 yrs., 1 between 5 and 6 yrs., and 2 were at-large for more than 13 yrs. (including the one at-large for 15.1 yrs.).

Table 5. Release and recapture areas for bluefin tuna recaptured in 1992.

<u>Release Area</u>	<u>Recapture Area</u>	<u>Total</u>
Mid-U.S. east coast	Mid-U.S. east coast	14
	North of Cape Cod	2
	East Atlantic	1
	Mediterranean	1
<unknown>	Mid-U.S. east coast	1
Total:		19

Yellowfin Tuna

In 1992, 511 yellowfin tuna were tagged and released, 267 by recreational fishermen, 236 by commercial fishermen, 7 by scientific staff, and 1 with tagger type unknown. Most (345) were released off the middle and northern U.S. east coast, 37 off Louisiana, 31 off Texas, and 45 far offshore in Gulf of Mexico waters. Tagged yellowfin tuna were also released off the Florida panhandle, Bermuda, north Florida and the Carolinas, southeast Florida, and northern Bahamas.

There were 26 recaptures of tagged yellowfin tuna in 1992; 12 by recreational fishermen, 13 by commercial fishermen, and 1 where the tagger type is unknown. The locations of 1992 yellowfin tuna tag-recaptures are given in Table 6.

Table 6. Release and recapture areas for yellowfin tuna recaptured in 1992.

<u>Release Area</u>	<u>Recapture Area</u>	<u>Total</u>
Mid-U.S. east coast	Mid-U.S. east coast	19
	Hispaniola	1
	N. Florida & Carolinas	1
Bermuda	Bermuda	2
W. Atlantic	Mid-U.S. east coast	1
N.E. U.S.	Mid-U.S. east coast	1
N. Florida & Carolinas	Mid-U.S. east coast	1
Total:		26

The longest time at-large for a 1992 tag-recaptured yellowfin tuna was 696 days. This fish was tagged and released off Long Island, NY in September, 1990, by a U.S. longline fisherman, and recaptured in August, 1992, just southeast of where it was released, by a U.S. recreational fisherman. While at-large, this fish gained an estimated 95 lbs., and grew an estimated 17 in.. Of the 1992 yellowfin tuna recaptures, 19 were at-large less than 1 yr., and 7 were at-large between 1 and 2 yrs..

The longest straight-line distance traveled by a 1992 tag-recaptured yellowfin tuna was 1,161 miles. It was released off Virginia Beach, VA, late in November, 1990, and recaptured near Isla de Mona, west of Puerto Rico, in July, 1992.

Other Species

Many species are tagged by program cooperators in addition to the primary target species of billfish and tunas. Summaries of results for these species for 1992 are given below:

Amberjack: There were 1,714 amberjack tagged in 1992; 627 (37%) in the Panama City, FL, area, although 468 were tagged off southeast Florida and the Keys, and 284 off the mid-U.S. east coast. There were more amberjack tag-recaptures in 1992 than for any other species in our program – 288 tagged amberjack were reported recaptured, of which 250 were at-large less than 1 yr., 27 between 1 and 2

yrs., 5 between 2 and 3 yrs., and 6 between 3 and 4 yrs.. The longest time at-large for an amberjack recaptured in 1992 was 1,322 days; the longest straight-line distance traveled was 767 miles, from Virginia Beach, VA, to Marathon, FL. A summary of the locations of the 1992 amberjack recaptures is given in Table 7.

Table 7. Release and recapture areas for amberjack recaptured in 1992.

<u>Release Area</u>	<u>Recapture Area</u>	<u>Total</u>
Florida panhandle	Florida panhandle	132
	<other>	32
	Louisiana	1
	Texas	1
Florida Keys	Florida Keys	38
	<other>	2
	Florida Panhandle	1
	N. Florida & Carolinas	1
	S.E. Florida	1
Mid-U.S. east coast	Mid-U.S. east coast	18
	Florida Keys	4
	Florida panhandle	1
	N. Florida & Carolinas	1
Texas	Texas	16
	<other>	2
Louisiana	Louisiana	8
	Florida panhandle	5
	<other>	2
S.E. Florida	S.E. Florida	6
	<other>	3
	Florida Keys	2
N. Florida & Carolinas	N. Florida & Carolinas	3
	<other>	3
Other Atlantic	Florida panhandle	1
	Louisiana	1
	N. Florida & Carolinas	1
	S.E. Florida	1
W. Florida	W. Florida	1
Total:		288

Cobia: In 1992, 301 cobia were tagged and released: 113 in southeast Florida, 90 off north Florida and the Carolinas, 48 off Florida panhandle, 22 off Louisiana, and 15 off the mid-U.S. east coast. There were 41 recaptures of tagged cobia, 31 were at-large less than 1 yr., 8 between 1 and 2 yrs., and 2 between 2 and 3 yrs. — their locations of release and recapture are summarized in Table 8.

Table 8. Release and recapture areas for cobia recaptured in 1992.

<u>Release Area</u>	<u>Recapture Area</u>	<u>Total</u>
Florida Keys	Florida Keys	16
	Louisiana	3
	Florida panhandle	2
	W. Florida	1
	S.E. Florida	1
N. Florida & Carolinas	Florida panhandle	3
	N. Florida & Carolinas	2
	Texas	1
Mid-U.S. east coast	Mid-U.S. east coast	2
	N. Florida & Carolinas	2
Florida panhandle	Florida Keys	2
	Florida panhandle	1
Other Atlantic	W. Florida	2
	Florida panhandle	1
W. Florida	W. Florida	1
Louisiana	Louisiana	1
Total:		41

The longest time at-large and the longest straight-line distance traveled for a tagged cobia recaptured in 1992 were 923 days (2.5 yrs.) and 514 miles, for a fish released off Islamorada, FL, and recaptured at the mouth of the Mississippi River in the Gulf of Mexico. While at-large, the fish grew an estimated 9 in..

King Mackerel: There were 4,132 king mackerel tagged and released in 1992; most were tagged off southeast Florida (2,635), north Florida through the Carolinas (723), Texas (310), the Florida panhandle

(148), and other Gulf of Mexico releases (122). There were 95 recaptures in 1992 of tagged king mackerel; the areas of release and recapture for these fish are summarized in Table 9.

Table 9. Release and recapture areas for king mackerel recaptured in 1992.

<u>Release Area</u>	<u>Recapture Area</u>	<u>Total</u>
Florida Keys	Florida Keys	24
	S.E. Florida	3
	N. Bahamas	1
S.E. Florida	S.E. Florida	13
	<unknown>	13
	N. Florida & Carolinas	3
	Florida Keys	1
N. Florida & Carolinas	N. Florida & Carolinas	11
	S.E. Florida	4
	<unknown>	1
	Mid-U.S. east coast	2
Mid-U.S. east coast	N. Florida & Carolinas	2
	S.E. Florida	1
	S. Bahamas	1
	Mid-U.S. east coast	1
	Florida Keys	1
Texas	Texas	4
	Louisiana	1
Other Atlantic	Texas	1
	N.E. U.S.	1
	N. Florida & Carolinas	1
Florida panhandle	Florida panhandle	1
	S.E. Florida	1
<unknown>	<unknown>	1
W. Florida	Florida panhandle	1
N. Bahamas	N. Bahamas	1
Total:		95

The longest straight-line distance traveled by a king mackerel recaptured in 1992 was nearly 782 miles by a fish released off of Hatteras, NC, in November, 1991 and recaptured only 5 months later northwest of the Turks and Caicos in the West Indies. The greatest time at-large for a king mackerel was 1,395 days (3.8 yrs.). The fish was tagged and released by a NMFS scientist off of Beaufort, NC in April, 1988, and recaptured in January, 1992, off of Hatteras, NC, by a commercial hand-line fisherman. The fish

gained an estimated 12 lbs.. Figure 7 gives a summary of the times at-large for 1992 king mackerel recaptures.

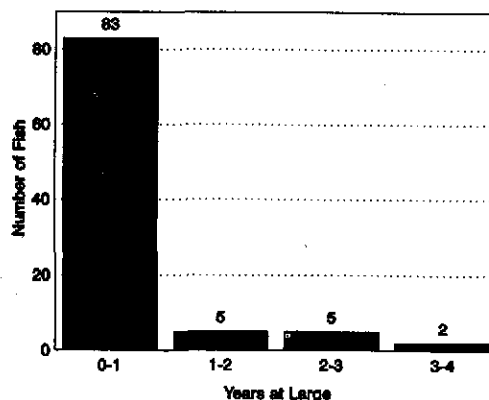


Figure 7. Years at-large for 1992 king mackerel recaptures (N=95).

Red Drum: There were 1,477 releases of tagged red drum in 1992; most releases being in waters of north Florida and the Carolinas (668), the Florida panhandle (252), Texas (163), the west Florida coast (159), Louisiana (135), and southeast Florida (60). Eighty red drum were recaptured in 1992, nearly all in the same areas they were released. The longest straight-line distance traveled was only 107 miles, from Oyster Lake, TX, to north of Galveston, TX. The longest time at-large for a 1992 recaptured red drum was 397 days, for a fish that was released and recaptured in Pensacola Bay, Florida. It grew an estimated 3 lbs. and 2 in. during its time at-large. All but five tagged red drum recaptured in 1992 had been at-large less than 1 yr..

Tarpon: The purchasing and distribution of tags for tarpon is now being managed by the Florida League of Anglers. They provide tags to those people who request them by purchasing the tags with donations made to them by clubs and individuals. If you would like to assist them by tagging or by sending a donation, please contact:

Florida League of Anglers
c/o Norma Stoppelbein
P.O. Box 1109
Sanibel, Florida 33957

There were 638 tarpon tagged and released in 1992, most along the west (336) and southeast (119) coasts of Florida, and in Louisiana (141). There were 11 tarpon recaptured in 1992. The longest straight-line distance traveled by a tag-recaptured tarpon in 1992 was about 732 miles, from Key West Harbor, FL, to Pamlico Sound, NC. The longest time at-large for 1992 tag-recaptured tarpon was about 1,869 days for a fish that was released from Key West, FL, in March, 1987, and recaptured about 5 yrs. later off of Ft. Myers, FL. It grew an estimated 15 lbs. and an estimated 24 in.. Figure 8 gives a summary of the times at-large for 1992 tarpon recaptures.

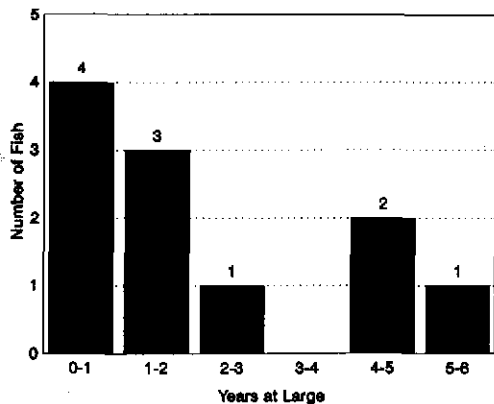


Figure 8. Years at-large for 1992 tarpon recaptures (N=11).

Commercial Participation

Commercial fishermen contribute significantly to our tag-release and recapture efforts. For example, more white marlin and swordfish were recaptured by commercial fishermen in 1992 than by recreational fishermen. The largest group of commercial fishermen involved in our program is the *Blue Water's Fisherman's Association [BWFA]* (Table 10). These longliners accounted for over 11% of the tag-releases in 1992. Their efforts are especially apparent among swordfish, bigeye tuna, and yellowfin tuna releases. For example, 1,100 swordfish (78.5%), 197 bigeye (80.4%), and 220 yellowfin (43%) were tagged and released by BWFA members. Many marlin and sailfish are also tagged by this organization, although recreational releases of billfish still dominate these species. We appreciate the participation of BWFA members in the CGFTP.

Table 10. *Blue Waters Fishermen's Association* members tagging 50 or more fish for CGFTP in 1992.

CAPTAIN	NUMBER OF FISH TAGGED
T. Baker Dunn	274
Richard Mears	181
James Mears	173
Larry Horne	172
Alex Sutton	159
A.J. Surrey	142
Rick Ross	122
Mike Carden	92
Eric Burcaw	91
Keith Larson	83
Dan Mears	81
Robert Rucky	52

Improving Tagging Information

The ultimate source of information for the CGFTP has always been the recapture of tagged fish. However, for over 40 yrs. this program has been known as a "Tag and Release" program and emphasis on obtaining tag recapture information has, to a certain extent, been neglected. This problem is more than just semantics because neglect of the recapture aspects of the program results in many lost opportunities for information. We have developed several approaches to improve the lack of effort on recapturing tagged fish, including issuing fluorescent orange tag recapture cards to improve the quality and quantity of recapture information (Figure 9). Time and experience have taught us that it is unreasonable to assume that the public can remember all the information we want from a tag-recaptured fish. The card is printed on fluorescent orange paper, so that no matter how much time passes before you recapture a tagged fish, you will be able to find it easily among your boat papers. The **Tag Recapture Card** is available in English and Spanish.

CNS Approved No. 0648-0259 Expires 09/30/94

TAG RECAPTURE CARD

1. SPECIES: _____
2. TAG NUMBER: _____
3. DATE RECAPTURED: _____
4. LOCATION/COUNTRY RECAPTURED: _____
5. LENGTH (inches/centimeters): _____ (lower jaw fork length)
6. WEIGHT (pounds/kilograms): _____ SEX: Male ☐ Female ☐
7. FISHING GEAR: _____
8. NAMES OF BOAT AND CAPTAIN/ANGLER: _____
9. ADDRESS OF (8) ABOVE: _____
10. PHONE OF (8) ABOVE: _____
11. HAS FISH BEEN SAVED (FRESHING) SO IT CAN BE SAMPLED?
 YES ☐ NO ☐
 THERE IS AN EXTRA REWARD FOR A FROZEN FISH. CALL COLLECT
 (305) 361-4248 (daytime)
 (305) 598-0944 (night/weekends)
12. COMMENTS: _____

Figure 9. New tag recapture cards are printed on fluorescent orange paper and are available in Spanish as well as English.

Our *Save It for Science* program is also another way we are trying to emphasize the recapture aspects of tagging activities. This program, started in 1982, encourages fishermen to retain carcasses of tag-recaptured fish, thereby affording scientists the opportunity to further knowledge on age and growth, along with examining the condition of the tag in the fish. The CGFTP encourages anglers to save all legal size tag recaptured fish by freezing, if possible, and contact the tagging program at 1-800-437-3936 for further instructions. On weekends or after business hours, call Dr. Eric Prince at (305) 598-0944.

The quality of growth information derived from tagging studies is directly related to the accuracy of the length and weight measurements and the length of time the fish has been at large. If the estimate of length at release is too high, then there is the potential that the reported length at recapture will show "negative growth." Thus, these data may not be useful in a growth study. Lengths and weights should be estimated or measured as precisely as possible. Some anglers use marks on either side of their boat to help estimate size when the fish is brought to the boat before releasing.

What To Do If You Recapture a Tagged Fish

Persons catching a tagged fish should understand that, to maximize the value of the information we obtain from tag-recaptures, the whole fish needs to be saved for scientific examination. If the fish is a billfish or tuna, we recommend that you save the whole fish (by freezing, if possible) and contact the CGFTP immediately at:

 (800) 437-3936

for further instructions. On weekends or at night, call Dr. Eric Prince at:

 (305) 598-0944

Conscientious taggers are hard to find. For example, there are times when release cards are missing from our files for as many as 50% of the recaptured fish reported to our program. In other words, a large proportion of participants do not take the time to return the release cards. This disturbing trend seems to be related to the hectic environment associated with tournament tagging activities but is prevalent in all segments of the tagging community. If you are going to participate, PLEASE take your time and use the correct tagging procedures. This is particularly relevant to returning the tag release cards to us, properly filled out, as soon as possible. We prefer to receive release cards within a week after release since a large proportion of tagged fish are recaptured during the first month at-large.

When you fill out your **Fish Tagging Report** card, please keep the following items in mind:

- Fill in the exact **date**.
- Give the **location** in degrees and minutes of latitude and longitude, if possible (if not, try to give us the Loran position). If this is not possible, tell us how far you were offshore, or the distance from some landmark.
- The **length** and **weight** boxes on the tagging card specify estimated size. If you measure the fish instead, please either cross out the (*est*) on the card or write in "measured." Also let us know if the length was *Total* (from the tip of the nose or bill to the end of the tail) or *Lower Jaw to Fork Length [LJFL]* (from the end of the lower jaw to the fork of the tail).
- Record the date, location, and size data **immediately** after releasing the fish – NOT AT THE END OF THE DAY – to avoid errors on the release card.

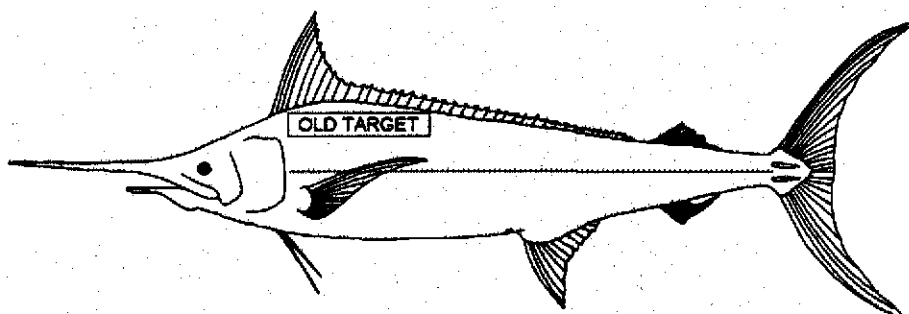
Acknowledgement Cards

- If you do not receive an acknowledgement card, please inform us as soon as possible. We send acknowledgement cards to tagging participants to confirm that we received the release card(s).
- It is also a good idea to keep a log of tagging information so that you can provide us with accurate information in case the data are lost. Tag-release cards are occasionally lost in the mail, but if we can find out about the loss before too much time passes, there is a chance that we can work together to recover the data.
- We usually send acknowledgement cards to the captain only, so if you would like one sent to the angler, please note this on the release card.

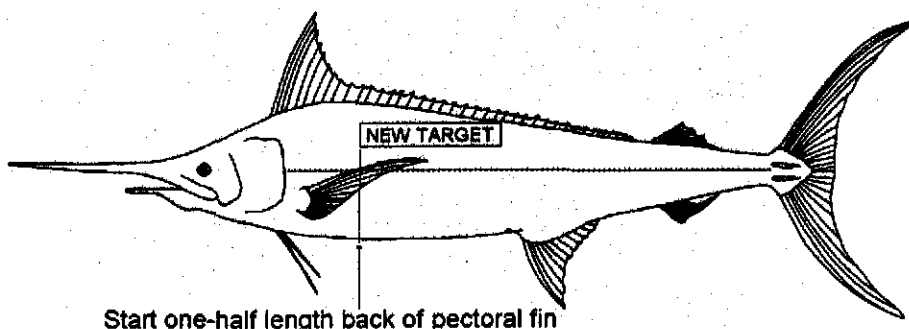
- Clearly **PRINT** the names and addresses of anglers and captains to insure proper credit can be given to them.

The target area identified for placing tags in billfish and tunas has, for many years, included an area near the head that we now feel is too close under most tagging conditions (Figure 10a). When seas are flat calm and the fish are played down to where they hardly move when brought alongside the boat, tagging within six in. of the head, gill plates, and eyes probably doesn't risk serious injury. However, most tagging **does not** take place under these conditions and we recommend a more prudent approach by placing the tags no closer than 12 in. from the head, gill plates, eyes, and other vital organs to avoid a last-minute movement by the fish causing injury. The tag should also be placed well above the lateral line to avoid serious injury. These considerations can be addressed by taking a downward approach over the fishes back and moving towards the caudal fin, starting no closer to the head than ½ the length of the pectoral fin (see Figure 10b). **Remember**, tagging doesn't kill fish, **BAD TAGGING KILLS FISH**.

(a)



(b)



Start one-half length back of pectoral fin

Figure 10. Target area for placing tags in billfish and tunas: (a) old target site, too close to head and vital organs; and (b) preferred new target site, no closer than 12 in. from the head and gill plates. The tag should also be placed well above the lateral line (shown as a horizontal line) to avoid serious injury. Billfish and tuna are elongated species and moving the target area further back toward the tail will help prevent misplaced tags hitting vital organs, ultimately increasing the number of tag-recaptured fish.

With the number of participants in the CGFTP growing every year, and the quality of the data improving as well, we can expect to see tag-recapture information playing an increasingly greater role in the study and management of fisheries.

Cooperative Tagging System

As part of the commitment to improve the usefulness and application of tagging data, NMFS's Southeast Fisheries Science Center has designed a comprehensive set of computer software for managing tagging data. This computer software is called the Cooperative Tagging System (CTS). The system was developed to act as a centralized depository for all marine tagging data and was intended to be used by all agencies (federal, state, and private) who tag

marine animals in the Atlantic Ocean and adjacent seas. Over 25 private, state, federal, and international tagging programs have received copies of CTS, and several are already using it for the storage and management of their tagging data. Agencies now using the CTS, or who have indicated that they will participate in this program, include: the International Commission for Conservation of Atlantic Tunas (ICCAT); the Fishery Resource Assessment and Management Program of the Caribbean Community (CARICOM); Canada's Department of Fisheries and Oceans; the American Littoral Society; The Billfish Foundation; and most coastal state agencies along the U.S. east and Gulf coasts.

In the fall of 1993, the first of many planned CTS "user" workshops was held in Miami at the Southeast Fisheries Center. Representatives from a wide variety of tagging organizations (Table 11) spent 2 days reviewing the design, use, and applicability of CTS. The Workshop was well received and generated a lot of enthusiasm in the use and expansion of CTS.

Several features of the CTS make it an ideal and long-needed addition in the area of tagging data management and use:

- because data in the CTS are ultimately stored in a *single location*, users are able to access region-wide tagging information, so they are not limited to using only their own data, nor do they have to expend much effort trying to obtain data from other tagging agencies.
- because the *validity* of data in CTS is checked during data-entry and data-editing, fewer errors are allowed into the database, and less time is spent tracking down mis-entered records.
- *standardized procedures* of the CTS result in consistency of data format between different agencies which allows more

precise comparison of information with less processing work by the user.

- *standardized reports* provided by CTS allows all users to quickly summarize data from one or several agencies, on one or several species. In many cases, these reports will be all that the user needs for answering a particular question.
- *flexible extraction techniques* provided by CTS allow the user to access a wide variety of data, in a wide variety of formats, for analysis by the user for whichever analysis technique is desired.

Table 11. Participants in the First Cooperative Tagging System Workshop, October 19-20, 1993.

AGENCY	LOCATION
American Littoral Society	Highland, NJ
Gulf Coast Conservation Assoc. of Louisiana	New Orleans, LA
South Carolina Wildlife & Marine Resources Dept.	Charleston, SC
Gulf Coast Research Laboratory	Ocean Springs, MS
Mote Marine Laboratory	Sarasota, FL
U.S. Fish & Wildlife	Annapolis, MD
Florida Department of Environmental Protection	St. Petersburg, FL
The Billfish Foundation	Ft. Lauderdale, FL
CARICOM (Fisheries Resource Assessment and Mgmt. Program)	St. Vincent, West Indies
NOAA, NMFS, Narragansett Lab	Narragansett, RI
NOAA, NMFS, Woods Hole Lab	Woods Hole, MA
NOAA, NMFS, SEFSC	Miami, FL

A major component of the CTS is its data processing and manipulation capability on a scale not previously available in the area of tagging research. The CTS also represents cooperative efforts of many different agencies, facilitates the interactions between these agencies, and improves the range of usefulness of each agency's data.

Tag Development and Performance

Tag Development

The NMFS Miami Lab Cooperative Game Fish Tagging Program has recently introduced a new tag design to the tagging program. This new tag design, referred to as the RF tag (Figure 11), is a miniaturization of the Billfish Foundation (TBF type) tag used primarily for billfish. The RF tag was designed to completely replace the "E-type" tags used previously for tagging most coastal species, some pelagic fishes, and reef species.

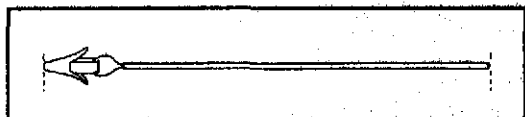


Figure 11. New RF tag design. Actual size is 5.25 inches.

The rationale for the introduction of the RF tag was based on several drawbacks in the E tag design. Some potential problems with the E-type tag discovered through empirical observation include:

- the use of liquid phenol as a means of attaching the anchor tip to the streamer was not totally effective and periodically separated, increasing shedding;

- the liquid phenol (a known carcinogen) used to join the streamer and anchor is a potential health risk for the person assembling the tag, as well as for the fish;
- the nylon barbs on the anchor of E tags required manual "flaring" by the angler, and inspection of returned tags revealed that this was not always performed;
- on some inshore species (i.e. king mackerel) the diameter (girth) of the streamer was shown to have excessive water resistance. This situation often left scarred and/or abraded external tissue where the tag made repeated contact with the animal and at times created a larger entrance aperture and prolonged proper healing of the tag wound.

Many of the improvements incorporated into the RF tag are based on the observations of recaptured specimens initially tagged with E-type and TBF type tags. By using medical-grade nylon for the anchor we hope to reduce the rejection of the tag by the fish, thereby potentially increasing its *biological compatibility*. While there have been few preliminary studies to confirm this in fish muscle, it has gained widespread acceptance in the bio-medical arena for use in human surgical implants.

The anchor of the RF tag is composed of medical-grade nylon. The design is based in part on the TBF tag, and includes permanently flared double barbs to ensure structural integrity of the dart after positioning in the musculature. To avoid the use of glues or caustic adhesive compounds, the streamer is mechanically attached to the head by means of a single loop of monofilament passing through a pre-drilled hole on the anchor. This monofilament then passes through the streamer and is doubled back and encased in 3 to 1 ratio shrink tubing along with the streamer. The streamer itself has a much smaller girth, less surface area, and weighs less than the E-

type tags. In addition, yellow color streamers have been replaced with red, based on the fact that the red hue is filtered out of the water column well before yellow, decreasing the tag's visibility to predators and other fish.

Tag Performance Research

The National Marine Fisheries Service's (NMFS) Southeast Fisheries Science Center has been engaged in efforts to develop better tags for species in its tagging program for more than a decade. The general approach taken in tag development has been to make tags more biologically compatible with the fish they are placed in. This will hopefully reduce rejection of the tag by the fish and increase tag retention, all of which will increase the volume and quality of information derived from tagging. The initial tag development work was done in collaboration with The Billfish Foundation and resulted in a medical-grade nylon dart design that has been used on billfish for more than 5 years. However, because the tag recapture rate for billfish is very low (less than 2%), results on tag performance studies have been slow in coming. In order to conduct this research on a timely basis with more control over the results, the NMFS has miniaturized the billfish tag for use on smaller species that can be held in captivity. These studies attempt to evaluate the performance, uncertainties, and management implications of several new types of dart tags on red snapper and red drum. The study examines the performance of the new RF-type tag design (discussed below) and the single barbed dart tag presently in widespread use for many coastal and reef species. Several hundred red drum and red snapper are being held in closed, controlled systems at the University of Miami fish hatchery and the New Orleans Aquarium of the Americas, respectively. After tagging with each tag type, the fish will be observed over the course of a year. During this time, indicators of tag performance, such as tag wounding, mortality, shedding rate, holding power, growth, physiology and condition of fish will be monitored between the tag types. With this study, we hope to answer some important questions about how the fish accepts, retains, and acclimates to the presence of dart tags.

An important question that we as fish taggers must ask is, "which is the superior tag, and which will provide better data in the long run?" The results of the study will hopefully produce definitive answers to these questions, as well as an idea of how dart tags might affect behavior of these animals. Another important question is, "how long does it take before the tag is set firmly and permanently into fish muscle?" We will answer the question using several methods, including systematically removing tissue samples around the dart tip and examining for signs of muscle growth under the microscope. In addition, we will measure the tag holding power through time. Finally, given the errors in size and weight estimation and potential shedding and performance of the tags, we will address how uncertainty in tag-recapture programs can affect the estimates of growth, mortality, migratory patterns, or population size estimates that we ultimately obtain from tagging data.

This study will greatly improve our knowledge of tag retention, tissue adherence, and biological compatibility of dart-type streamer tags in red drum and red snapper. This in turn leads to a better understanding of management models that are based on mark-recapture data. These objectives, when combined, will lead to more intelligent stock assessments and better management of these natural resources.

Cooperative Efforts

Double-Tagging

The tagging procedures for the double tagging study are more demanding than the procedures used in the regular tagging program. Therefore, **double tagging is not for everyone** and we prefer that only the more experienced taggers attempt this activity. For example, when double tagging we prefer to have one tag placed on each side of the billfish. This would greatly increase the probability that a tag-recaptured fish would be seen when brought along-side the boat. However, tagging on both sides of the fish takes longer and is not always possible under field conditions. Some of the more innovative participants

in the experiment built tagging sticks that insert both tags into the fish at the same time. Although this simplifies the tagging procedure and saves time, we discourage this practice because having the tags on one side of the fish close enough to touch each other invalidates the purpose of the experiment. That is, under these conditions the shedding rates of the two tags are not independent of each.

To date, there has been a total of 1,830 double-tagged billfish released and 19 (about 1%) of these have been recaptured (Table 12). Most of the double tagging has been with sailfish, but significant numbers of marlin and swordfish have also been double tagged. Of the 19 recaptured fish, 12 had both tags intact, while 7 of the 19 only had the TBF tag; the NMFS tag was apparently shed in 7 out of the 19 recaptures. Because the total number of double tagged billfish that have been recaptured has been so low, definitive conclusions from these preliminary results are not possible. Participants in the double tagging program have included commercial as well as recreational fishermen and we greatly appreciate their efforts.

Table 12. Summary of double-tagging experiment conducted by The Billfish Foundation and NMFS.

SPECIES	RELEASES	RECAPTURES
Sailfish	757	13
Blue Marlin	494	2
White Marlin	330	3
Swordfish	228	1
Black Marlin	11	0
Striped Marlin	5	0
Spearfish	5	0
TOTAL	1,830	19

Tagging Awards

The Axelson Fishing Tackle Company (AFTCO) first started a cooperative effort with the CGFTP to recognize contributors to the tagging program in 1989. Several other tagging programs also back the effort, including The Billfish Foundation, Fish Trackers, Inc., Gulf Coast Conservation Association, and the South Carolina Marine Game Fish Tagging Program. Anglers and captains compete for handsome trophies for those tagging the most of each of the seven designated species. All fish must have been tagged in the Atlantic Ocean, Gulf of Mexico, or Caribbean Sea. Anglers and captains who tagged a certain number of each species received an AFTCO Tag Flag award. The designated species, and the number required to qualify (in parentheses) for the AFTCO Tag Flag for each species, are: albacore (5), bigeye and/or yellowfin tuna (5), bluefin tuna (5), blue marlin (3), white marlin (5), and sailfish (10). [Note: cobia and amberjack were dropped from Tag/Flag tournaments in 1991]. For further information about the AFTCO Tag/Flag Tournament, contact the CGFTP or:

AFTCO Manufacturing Co.
17351 Murphy Avenue
Irvine, CA 92714.

The winners of the 1992 individual are listed in Table 13. Some of the winners are shown in Figure 12. AFTCO also awards trophies to the angler and captain who tagged the most billfish overall. The winners for 1992 were angler Hal Prewitt and captain Luis Suarez.

We began to acknowledge participants of the CGFTP in 1976. We cannot give taggers credit for fish tagged and released unless we receive the tag-release cards. Please make sure the addresses on the cards are correct and complete. Some participants use stamp pads or labels on their release cards. Program participants for 1992 are listed in Appendices 1 and 2.

The CGFTP extends its congratulations to the winning anglers and captains, and to the sponsoring organizations for their effort and cooperation in the conservation of our marine game fish resources.

Table 13. Winners of the 1992 individual trophies (both anglers and captains tagging the most fish of the designated species) for the AFTCO Tag/Flag tournaments.

Species	Winners	
	Anglers	Captain
Albacore	Charles E. Bouchard	Pete Barrett
Donated by:	New York Sportfishing Federation	American Fishing Tackle Manufacturers' Assoc. (AFTMA)
Bluefin Tuna	Alan P. Gelfuso	Al Anderson
Donated by:	International Game Fish Association (IGFA)	International Game Fish Association (IGFA)
Bigeye and Yellowfin Tuna	Stanley Klimek	John Bayliss
Donated by:	American Fishing Tackle Manufacturers' Assoc. (AFTMA)	American Fishing Tackle Manufacturers' Assoc. (AFTMA)
Blue Marlin	Jim Edmiston	Luis Suarez
Donated by:	National Coalition for Marine Conservation (NCMC)	National Coalition for Marine Conservation (NCMC)
White Marlin	Hal Prewitt	Paul Ivey
Donated by:	The Billfish Foundation (TBF)	The Billfish Foundation (TBF)
Sailfish	Hal Prewitt	Ali Al Harazi
Donated by:	International Game Fish Association (IGFA)	Florida Conservation Association

Recapture Incentives and Rewards

In the past, the CGFTP has offered a \$5.00 reward to the angler reporting a tagged fish. The CGFTP now awards a gray embroidered hat, with the NMFS tagging flag emblem, to the person reporting the recapture of a tagged fish (monetary awards are available for king mackerel recaptures by special request only). The gray hats cannot be purchased; however, the same hat in either black or in various colors can be purchased for \$10.00 (\$2.00 of this charge goes towards a NMFS fund to buy the gray hats) from our new supplier:

Island Custom Embroidery
88511 Overseas Highway
Tavernier, FL 33070

(305) 852-6317
FAX (305) 852-9553



Figure 12. Winners of AFTCO 1992 tagging awards, with the AFTCO representative. From left to right: Charles Bouchard, Stanley Klimek, Hal Prewitt, Jim Edmiston, Ben Secrest (AFTCO), Al Anderson, Paul Ivey, Don Mann accepting for Luis Suarez.

Appendix 1. Captains who made outstanding contributions to the CGFTP in 1992 by assisting in the tagging of 11 or more sailfish, blue marlin, white marlin, swordfish, bluefin tuna, yellowfin tuna, albacore tuna and bigeye tuna. The "Captain Tagged" column signifies fish tagged by anglers while fishing as captains--these fish are included in the total.

CAPTAIN	SPECIES								Total Tagged	Captain Tagged
	Sail-fish	Blue Marlin	White Marlin	Sword-fish	Bluefin Tuna	Yellow-fin	Alba-core	Bigeye Tuna		
T BAKER DUNN	16	24	18	239	0	8	0	10	315	0
LUIS SUAREZ	48	93	36	0	0	0	0	0	177	0
ALEX SUTTON	4	18	8	100	0	2	0	35	167	0
JAMES D MEARS	2	7	17	91	3	13	0	33	166	0
LARRY HORNE	5	11	16	88	3	4	1	35	163	0
AL H ANDERSON	0	0	0	0	160	0	0	0	160	0
RICHARD MEARS	2	15	28	76	8	11	3	3	146	0
A J SURREY	0	1	5	75	3	47	2	9	142	0
BRAD SIMONDS	74	41	12	0	0	0	0	0	127	0
RICK ROSS	5	4	5	90	0	2	0	0	106	0
TOM CARBO	92	2	5	0	0	1	0	0	100	0
ANDREW DANIELO	0	0	0	0	96	0	0	0	96	2
MIKE CARDEN	1	3	12	0	1	75	0	0	92	0
ERIC BURCAW	0	4	9	41	0	13	0	20	87	0
JOHN BAYLISS	7	7	20	0	0	49	0	0	83	0
TIMOTHY J HYDE	79	12	11	0	0	0	2	1	105	1
MIKE ADKINS	57	1	13	0	0	0	0	0	71	6
DAN MEARS	0	0	8	40	2	6	0	15	71	0
KEITH LARSON	1	2	1	24	19	13	0	9	69	0
BRAD PICARIELLO	68	0	0	0	0	0	0	0	68	0
JERRY SHEPHERD	1	6	1	0	0	56	0	0	64	0
DON HAMILTON	2	56	2	0	0	0	0	0	60	0
LUIS MILLAN	8	23	26	0	0	0	0	0	57	0
TIM MCDONOUGH	4	7	11	32	1	0	2	0	57	0
SKIP RUDOLPH	0	0	0	0	56	0	0	0	56	0
ROBERT S RUCKY	0	1	11	28	2	8	0	5	55	1
EVERETT A PETRONIO	0	0	0	0	54	0	0	0	54	0
JEFF WEST	3	38	9	0	0	0	0	0	50	2
GEORGE BROOKS	45	1	3	0	0	0	0	0	49	0
MICHAEL AIKENS	4	14	31	0	0	0	0	0	49	0
BILL NOLL	47	0	0	0	0	0	0	0	47	2
SUNNY SEBAUGH	0	0	0	29	0	2	0	13	44	0
JIM GARRITY	39	0	5	0	0	0	0	0	44	0
MIKE BENITEZ	1	41	2	0	0	0	0	0	44	0
BILL MCCAULEY	3	37	3	0	0	0	0	0	43	0
MIKE PATRICK	37	2	3	0	0	0	0	0	42	0
DAVID R DOLL	42	0	0	0	0	0	0	0	42	8
TOM BARRIE	0	4	0	35	0	1	0	1	41	0
T RICH TEMPLETON	0	0	0	0	40	0	0	0	40	3
JOE JOACHIMOWSKI	31	1	8	0	0	0	0	0	40	0
MIKE BRUCKER	39	1	0	0	0	0	0	0	40	0
SKIP NIELSEN	38	0	1	0	0	0	0	0	39	0
CHARLES PEYTON	36	0	1	0	0	0	0	0	37	0
DENNIS MERTEN	0	34	3	0	0	0	0	0	37	1
JERRY GRANDINETTI	2	9	4	14	0	1	0	6	36	0
PAUL IVEY	28	0	8	0	0	0	0	0	36	0
BARRY MARX	0	0	2	32	0	0	0	1	35	0
SALVADORE SAN MARTIN	34	0	1	0	0	0	0	0	35	0
RICHARD KORNAHRENS	1	4	7	18	2	0	0	3	35	0
JOHN HANKS	3	5	5	20	0	1	0	0	34	0
NELSON BEIDEMAN	0	0	9	4	17	0	1	3	34	0
BOB ORR	30	1	3	0	0	0	0	0	34	0
CHET HATFIELD	31	0	3	0	0	0	0	0	34	0
TOM MCLOUGHLIN	0	0	0	0	34	0	0	0	34	0
JIM LAMBERT	32	0	0	0	0	0	0	0	32	3
MICHAEL NEIL	0	1	9	15	0	1	0	6	32	0

Appendix 1. (Continued)

CAPTAIN	SPECIES								Total Tagged	Captain Tagged
	Sail-fish	Blue Marlin	White Marlin	Sword-fish	Bluefin Tuna	Yellow-fin	Albacore	Bigeye Tuna		
JOE MERCURIO	28	1	2	0	0	0	0	0	31	0
F J BUZO	21	0	9	0	0	0	0	0	30	0
BUZZ SMART	0	0	0	0	29	0	0	0	29	0
JIM BOWMAN	14	13	2	0	0	0	0	0	29	1
ALEX ADLER	29	0	0	0	0	0	0	0	29	1
ERIC CARLSON	28	0	0	0	0	0	0	0	28	1
TOM GUOBA	0	0	1	24	0	0	0	3	28	0
PAUL PUSKAS	0	0	4	9	13	0	0	2	28	0
CHARLES JOHNSON	0	0	0	21	0	1	1	4	27	0
ED DWYER	19	2	1	0	0	5	0	0	27	0
JOSEPH S BARI	1	5	11	7	0	1	0	2	27	9
FRANK BRANCH	0	27	0	0	0	0	0	0	27	0
ROBERT E ROWAN	0	0	0	0	27	0	0	0	27	18
DEAN ADLER	26	0	0	0	0	0	0	0	26	0
SKIP FELLER	2	4	16	0	0	4	0	0	26	0
JOHN SABONIS	0	26	0	0	0	0	0	0	26	0
EVERETT BASSETT	26	0	0	0	0	0	0	0	26	0
DEW FORBES	14	5	6	0	0	0	0	0	25	0
O B VERNON O'BRYAN	24	1	0	0	0	0	0	0	25	0
FRANK "SKIP" SMITH	19	6	0	0	0	0	0	0	25	6
RON/JAN MITCHEM	25	0	0	0	0	0	0	0	25	9
GEORGE HEHNER	0	0	0	0	24	0	0	0	24	0
TOM DAVIS	1	2	6	12	1	0	0	2	24	12
CLYDE UPCHURCH	24	0	0	0	0	0	0	0	24	0
JACK REECE	0	13	10	0	0	0	0	0	23	1
JOHN W CALDWELL	0	0	6	17	0	0	0	0	23	0
RODDY HAYS	0	19	0	0	0	0	2	2	23	0
DON MCWHERTER	22	0	1	0	0	0	0	0	23	0
LARRY THOMPSON	0	1	1	21	0	0	0	0	23	0
SCOTT DRABINOWICZ	11	4	2	5	0	1	0	0	23	0
JIM WALSH	0	0	0	0	22	0	0	0	22	1
MAURICE SCHAUB	0	0	0	17	2	3	0	0	22	0
ANGUS PAUL	22	0	0	0	0	0	0	0	22	9
JACK PLACHTER	20	1	0	0	0	0	0	0	21	0
DORSEY "CUZ" PROTHMAN	20	0	1	0	0	0	0	0	21	1
NORM WELTER	21	0	0	0	0	0	0	0	21	7
CHARLES D SCHLOSS	0	1	1	14	0	1	0	4	21	0
ANDY REPKO	0	0	0	0	20	0	0	0	20	0
RUSSELL YOUNG	0	20	0	0	0	0	0	0	20	0
KELVIN "RED" BAILEY	4	16	0	0	0	0	0	0	20	0
DAVID REILLY	20	0	0	0	0	0	0	0	20	6
HECTOR R LOPEZ FLORES	1	19	0	0	0	0	0	0	20	0
GLENN P TEMPLET	14	1	4	0	0	1	0	0	20	0
HANK HALLIGER	0	2	4	13	0	0	0	1	20	0
GEORGE MORE	19	1	0	0	0	0	0	0	20	0
MURRAY CUDWORTH	0	6	6	2	0	2	0	3	19	0
PETER DUBOSE	2	4	12	0	0	0	0	0	18	0
BOB CROSWAIT	4	1	4	0	0	9	0	0	18	0
JIM SHARPE	16	2	0	0	0	0	0	0	18	0
JIM KILLILEA	0	0	1	0	16	1	0	0	18	3
JEFF CRANSHAW	17	0	0	0	0	0	0	0	17	2
BILL MCDOW	14	0	3	0	0	0	0	0	17	1
CARL MCCANN	16	0	0	0	0	0	0	0	16	0
ROBERT SANGSTER	0	0	0	0	16	0	0	0	16	3
STEVEN SEAMAN	10	5	1	0	0	0	0	0	16	3
SPIKE HERBERT	1	14	1	0	0	0	0	0	16	0
GARY CRAIG	16	0	0	0	0	0	0	0	16	0
YVES COEFFARD	0	0	16	0	0	0	0	0	16	0
PAUL H CONNERS	15	0	1	0	0	0	0	0	16	9
DAVID WRIGHT	0	0	12	0	0	0	4	0	16	0
JIM ALLEY	11	2	2	0	0	0	0	0	15	1
RAY TEMPLE	0	0	0	0	4	11	0	0	15	0

Appendix 1. (Continued)

CAPTAIN	SPECIES								Total Tagged	Captain Tagged
	Sail-fish	Blue Marlin	White Marlin	Sword-fish	Bluefin Tuna	Yellow-fin	Albacore	Bigeye Tuna		
RICH HELLMUTH	11	4	0	0	0	0	0	0	15	0
ROBERT BURCAW	0	0	0	4	0	11	0	0	15	0
STAN REUWER	15	0	0	0	0	0	0	0	15	6
JIMMY DAVID	15	0	0	0	0	0	0	0	15	4
MIKE MCCLAMROCK	0	14	1	0	0	0	0	0	15	0
BEN GREEN	10	4	1	0	0	0	0	0	15	0
TONY TILLET	9	0	5	0	0	0	0	0	14	1
NED ASHBY	2	0	12	0	0	0	0	0	14	0
BILLY BLACK	5	8	1	0	0	0	0	0	14	0
RON SCHATMAN	11	3	0	0	0	0	0	0	14	1
MICHAEL WYDEN	13	0	1	0	0	0	0	0	14	9
JOE KANE	14	0	0	0	0	0	0	0	14	0
GERRARD NARIN	0	10	3	0	0	0	0	0	13	0
JACK FALCUCCI	5	0	7	0	1	0	0	0	13	0
CHARLES JOHNSON	0	0	0	0	13	0	0	0	13	0
CHARLES BALDWIN	13	0	0	0	0	0	0	0	13	0
KEVIN DILLON	5	6	2	0	0	0	0	0	13	4
LOUIS PELISSARD	0	0	13	0	0	0	0	0	13	11
STEVE DANIELS	0	11	2	0	0	0	0	0	13	0
JOHN PRYER	1	1	0	1	0	6	1	3	13	0
MARK RANSFORD	11	1	0	1	0	0	0	0	13	0
RICHARD L DAVIS	13	0	0	0	0	0	0	0	13	6
HENRY SINCLAIR	11	1	1	0	0	0	0	0	13	0
DAVE PURDO	9	4	0	0	0	0	0	0	13	0
DAVE BAGGETT	13	0	0	0	0	0	0	0	13	6
RITCHIE HOWELL	0	0	0	0	0	13	0	0	13	0
MIKE FRENETTE	0	0	0	0	0	12	0	0	12	0
AL ST GERMAIN	2	10	0	0	0	0	0	0	12	0
JESUS SALAR	0	0	12	0	0	0	0	0	12	0
ROBERT EDSBERG	4	0	8	0	0	0	0	0	12	0
EDMUND WETTENGEL	1	10	1	0	0	0	0	0	12	6
JAMES T PEACHEY	4	6	2	0	0	0	0	0	12	1
SAM STOKES	3	4	5	0	0	0	0	0	12	0
ROGER KUZARA	8	3	1	0	0	0	0	0	12	0
RONNIE RIDGEWAY	1	1	1	9	0	0	0	0	12	0
BOB PELOSI	12	0	0	0	0	0	0	0	12	1
JEFF CREARY	11	0	0	0	0	0	0	0	11	0
GERARD DESILVA	7	4	0	0	0	0	0	0	11	0
ROB DIXON	11	0	0	0	0	0	0	0	11	0
JERRY SEAMAN	9	1	1	0	0	0	0	0	11	4
STEPHEN ELLIS	0	0	0	11	0	0	0	0	11	0
TONY CATALFAMO	11	0	0	0	0	0	0	0	11	1
BEAU FRANKLIN	11	0	0	0	0	0	0	0	11	0
THOMAS MEHLIN	11	0	0	0	0	0	0	0	11	0
ADRIAN CRUZ	0	0	0	10	0	1	0	0	11	0
PETE BARRETT	2	0	0	0	0	0	9	0	11	0
HENRY OTTO	11	0	0	0	0	0	0	0	11	0
BILLY WRIGHT	11	0	0	0	0	0	0	0	11	0

Appendix 2. Anglers who made outstanding contributions to the CGFTP in 1992 by assisting in the tagging of 11 or more sailfish, blue marlin, white marlin, swordfish, bluefin tuna, yellowfin tuna, albacore tuna and bigeye tuna. The "Captain Tagged" column signifies fish tagged by anglers while fishing as captains--these fish are included in the total.

ANGLERS	SPECIES								Total Tagged	Captain Tagged
	Sail-fish	Blue Marlin	White Marlin	Sword-fish	Bluefin Tuna	Yellow-fin	Alba-core	Bigeye Tuna		
STANLEY KLIMEK	1	6	1	0	0	56	0	0	64	0
BUDDY SCHULTZ	43	0	0	0	0	0	0	0	43	14
PHIL PRICE	39	0	0	0	0	0	0	0	39	0
HARVEY LAMM	35	1	2	0	0	0	0	1	39	0
JOE BRODESSER	36	1	0	0	0	0	0	0	37	5
HAL PREWITT	28	0	8	0	0	0	0	0	36	0
TOMMY SPINOSA	32	1	1	0	0	0	0	0	34	0
CHARLES E BOUCHARD	18	7	5	0	0	0	1	0	31	0
ALAN P GELFUSO	0	0	0	0	31	0	0	0	31	22
BRUCE SCHORR	7	20	2	0	0	0	0	0	29	0
MAUREEN GOLDWARE	25	1	3	0	0	0	0	0	29	0
JOHN BASSETT	27	0	0	0	0	0	0	0	27	0
ROBERT MURRAY	0	0	0	0	25	0	0	0	25	0
STEPHEN GOLDWARE	22	0	2	0	0	0	0	0	24	0
JOE YERKES	24	0	0	0	0	0	0	0	24	0
SCOTT J SOARES	0	1	1	14	0	1	0	4	21	0
DEAN JACKSON	20	0	0	0	0	0	0	0	20	7
LINDA NOLL	20	0	0	0	0	0	0	0	20	0
FRED DAVID	19	0	0	0	0	0	0	0	19	1
J RICHARD JECK	18	0	0	0	0	0	0	0	18	0
CLIFF MADDOCK	17	0	0	0	0	0	0	0	17	9
JIM MURRAY	15	0	0	0	0	0	0	0	15	3
LEE PEPIN	0	0	0	0	15	0	0	0	15	1
TIM MADDOCK	15	0	0	0	0	0	0	0	15	7
ROBERT GILMORE	0	0	0	0	15	0	0	0	15	0
PALMER CLINGMAN	0	0	0	13	0	0	0	1	14	1
DANNY WALSH	14	0	0	0	0	0	0	0	14	0
LORI REPKO	0	0	0	0	14	0	0	0	14	0
WALTER KIRTLAND	13	0	1	0	0	0	0	0	14	0
DONA WILSON	0	14	0	0	0	0	0	0	14	0
CARL PATCHIN	14	0	0	0	0	0	0	0	14	0
LEONARD MECKLER	4	8	1	0	0	0	0	0	13	0
CAROLE SPEICHER	8	1	4	0	0	0	0	0	13	0
ROSS NOVAK	2	6	4	0	0	0	0	0	12	0
RONALD L ELLIS	4	0	8	0	0	0	0	0	12	0
MEL IMMERGUT	0	0	0	0	12	0	0	0	12	0
ROB PELOSI	12	0	0	0	0	0	0	0	12	0
MARSHA BIERMAN	2	9	0	0	0	0	0	0	11	0
SHELLY BEDELL	11	0	0	0	0	0	0	0	11	0
JIM BOYD	11	0	0	0	0	0	0	0	11	8
CHRISTOPHER HALL	8	0	3	0	0	0	0	0	11	1